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# NASA goes Hawaiian

Astronaut Edward T. Lu (at musical keyboard), Expedition 7 NASA ISS science officer and flight engineer, and Cosmonaut Yuri I. Malenchenko, mission commander, share a light moment during off-shift time in the Destiny laboratory on the International Space Station (ISS). Malenchenko represents Rosaviakosmos.

For more about Ed Lu's 40th birthday celebration, see page 7.

# Director's Message



## Riding the dragon

There's an ancient Chinese proverb that goes like this: Three men were traveling along a narrow mountain trail when they came upon a ferocious dragon. The first man tried to fight the dragon, but the dragon was too strong and it defeated and ate the man. The second man tried to run away from the dragon, but the dragon was too fast and it overcame the man and ate him. The third man, seeing what had happened to the first two, took the only other option. He jumped upon the dragon's back and held on for dear life.

At first, riding the dragon was very difficult and sometimes even terrifying. It also seemed dangerous, for the dragon was totally unpredictable and appeared to be out of control. However the man held on and survived. As time went by he was able to sense when the dragon was going to change directions and it became easier to stay on its back. Although the man could never control the dragon and had to be continuously watchful, he was able to become more comfortable riding the dragon and was actually able to share in the fruits of the dragon's many victories; for no one could stop the dragon. In the end, the man prospered because he had learned how to ride the dragon.

You've probably figured out that the dragon that these men faced was the "Dragon of Change." It's also obvious that the Dragon of Change is a prominent figure at NASA and JSC. Even before the awful tragedy that occurred February 1, we had been in a state of flux for the past year: a new Administrator, a new center director, a new International Space

Station Program Manager, a new Vision and Mission, One NASA, Educator Astronauts, IFMP, Freedom to Manage, etc.

This propensity toward change has become even more pronounced since the *Columbia* accident: the intense support of the CAIB investigation by many of you, a major turnover in Space Shuttle Program senior management, Return to Flight activities, Space Shuttle Service Life Extension Program activities, Orbital Space Plane support, new Center Directors throughout the Space Flight Enterprise, full cost accounting, etc. You name it; it's changing! Just imagine what change might take place after the official CAIB report is published!

So, what are we going to do about all this? We can dig our heels in and resist or we might high-tail it and find something else to do. Neither one of those options worked for the men on the trail. Here's what I think we should do. We should embrace these changes and use them to our advantage in improving our work, our processes and ourselves. This won't be easy. Doing things differently is a naturally uncomfortable enterprise. However, the payoff can be extraordinary if we have the courage to accept new leadership, new ideas and new methods.

Let's be positive, aggressive and flexible in responding to the changes taking place. Remember, as long as we retain our core values of total integrity, professional excellence, respect and commitment, our course will stay true and we will triumph. Let's ride the Dragon and reap its rewards!

Beak sends...

## Recent NASA personnel changes

There have been a number of recent management changes at NASA centers around the country. Here is a breakdown of the new assignments as of press time.

### 1 Johnson Space Center – Space Shuttle Program

**Bill Parsons**, Manager, Space Shuttle Program

*Previous position: Center Director, Stennis Space Center*

**N. Wayne Hale, Jr.**, Acting Deputy Manager, Space Shuttle Program

*Previous position: Manager of Launch Integration at Kennedy Space Center*

**Steve M. Poulos, Jr.**, Acting Manager, Orbiter Project Office

*Previous position: Chief, Crew and Thermal Systems Division, Engineering Directorate*

**Edward J. Mango**, Deputy Manager, Orbiter Project Office

*Previous position: Technical Assistant to the Space Shuttle Program Manager on detail from KSC*

**John P. Shannon**, Acting Manager, Flight Operations and Integration

*Previous position: Lead Flight Director on STS-102 in March 2001, then Deputy Director of the Columbia Task Force that served as the interface between NASA and the Columbia Accident Investigation Board*

**John F. Muratore**, Manager, Systems Integration Office

*Previous position: Assistant to the Director of Engineering at JSC*

### 2 Ames Research Center

**G. Allen Flynt**, Deputy Center Director

*Previous position: Manager of JSC's EVA Project Office*

### 3 Kennedy Space Center

**James W. Kennedy**, Center Director

*Previous position: KSC's Deputy Director*

**Woodrow Whitlow, Jr.**, Deputy Director

*Previous position: Director of Research and Technology at Glenn Research Center*

**James Hattaway, Jr.**, Associate Director

*Previous position: Director of KSC's Procurement Office*

**Michael Wetmore**, Launch Integration Manager, Space Shuttle Program

*Previous position: Acting Director of Shuttle Processing at KSC*

### 4 Langley Research Center

**Gen. Roy D. Bridges**, Center Director

*Previous position: Center Director for KSC*

**Ralph Roe, Jr.**, Special Assitant to the Center Director

*Previous position: Manager of JSC's Space Shuttle Vehicle Engineering Office*

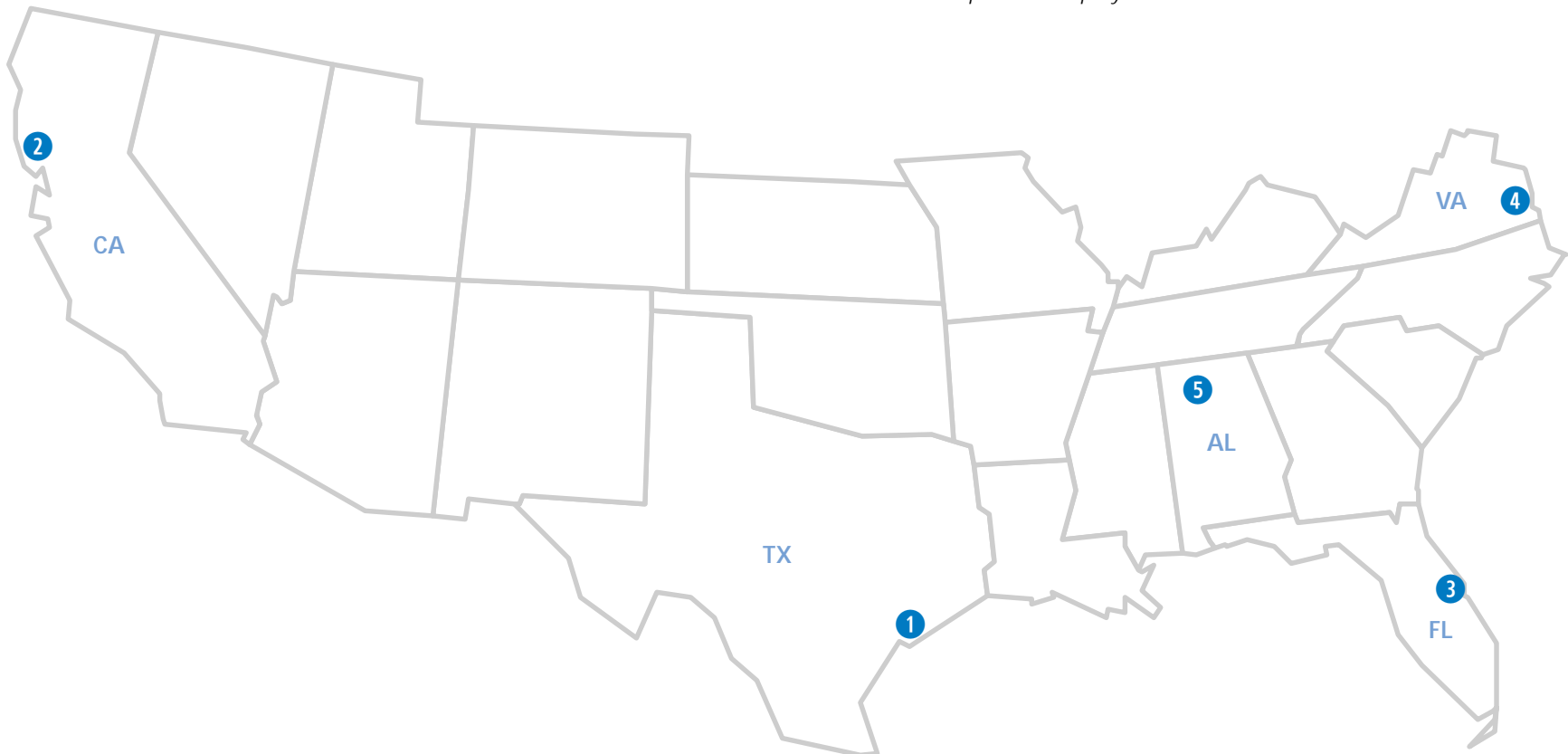
### 5 Marshall Space Flight Center

**David A. King**, Center Director

*Previous position: MSFC's Deputy Director*

**Rex D. Geveden**, Deputy Center Director

*Previous position: Deputy Director of MSFC's Science Directorate*





# Beating the Odds

By Amiko Nevills



On November 13, 2002, a routine checkup at the doctor's office suddenly turned grim for Gerald Dragoo when he suffered a massive heart attack.

Dragoo, an avid traveler and hiker, was clinging to life – not unlike the time he had fallen 50 feet from a rugged mountainside in Nevada nearly ten years earlier. In both instances, Dragoo managed to triumph over disaster. Back then, he was rescued after surviving for seven days in the wilderness. Following his heart attack, he had some help from a tiny heart-assist device co-developed by NASA engineers.

Doctors rushed Dragoo to heart specialists at Bakersfield Memorial Hospital in California. The heart attack had caused massive blockages to both the right and left sides of his heart. Doctors told his family that surgery would help to alleviate some of the blockage, but it would not be a permanent solution.

Meanwhile, Dragoo was placed on an external heart and lung machine to help keep his heart pumping and allow it to recover. Because this machine operates externally, circulating blood out of the body through the pump and back into the body, the patient remains unconscious during its operation and can only be placed on it for a short period, said Dragoo's daughter, Lara Eriksson.

Although Dragoo's will to live was thriving, his heart was failing. A heart transplant became critical for him to survive. After unsuccessful attempts to start the left side of his heart as a result of the blockage caused by the heart attack, doctors transferred Dragoo to the University of Southern California Hospital to await a donor heart.

According to the National Center for Health Statistics, cardiovascular disorders claim the lives of nearly 700,000 Americans each year, ranking heart disease as America's number one killer, coming before cancer and motor vehicle accidents. The American Heart Association estimates that a heart transplant could benefit about 40,000 Americans a year, potentially reducing the mortality rate.

However, the need for a heart transplant grossly tips the scales when weighed against the availability of new hearts. Each year, heart centers across the United States add about 100,000 new patients to extensive waiting lists for the necessary life-saving operation with little prospect of receiving one of the 2,200 a year available donor hearts.

For Dragoo, the statistics seemed insurmountable. Yet a medical marvel based on NASA technology would soon prove that the odds could be beaten. Almost one week from his initial heart attack, Dragoo received an implantable heart pump, which uses NASA-developed technology.

This miniature device weighs less than four ounces and is about one-tenth the size of other pulsating heart pumps, which pump blood in a cycle that mimics the heart. It was the pioneering result of a team of NASA engineers, including the late JSC engineer David Saucier and renowned heart surgeon Dr. Michael DeBakey, Chancellor Emeritus of Houston's Baylor College of Medicine.

A solution to develop a miniaturized left-ventricular assist device (LVAD) was found in Space Shuttle fuel and oxidizer pump technology. Although NASA engineers found the flow of Shuttle fuel to be faster than blood, they found it to be very similar in many ways and were able to design a device with one single, rotary moving part that would reduce blood clotting – a problem with other heart pumps.

A Houston-based company, MicroMed Technology, Inc., manufactures the now-called MicroMed/DeBakey VAD®. To date, the heart pump has been implanted in 190 patients, 148 of which were implanted during European trials and 42 during ongoing U.S. trials. Trials in the United States will involve about 180 total implants.

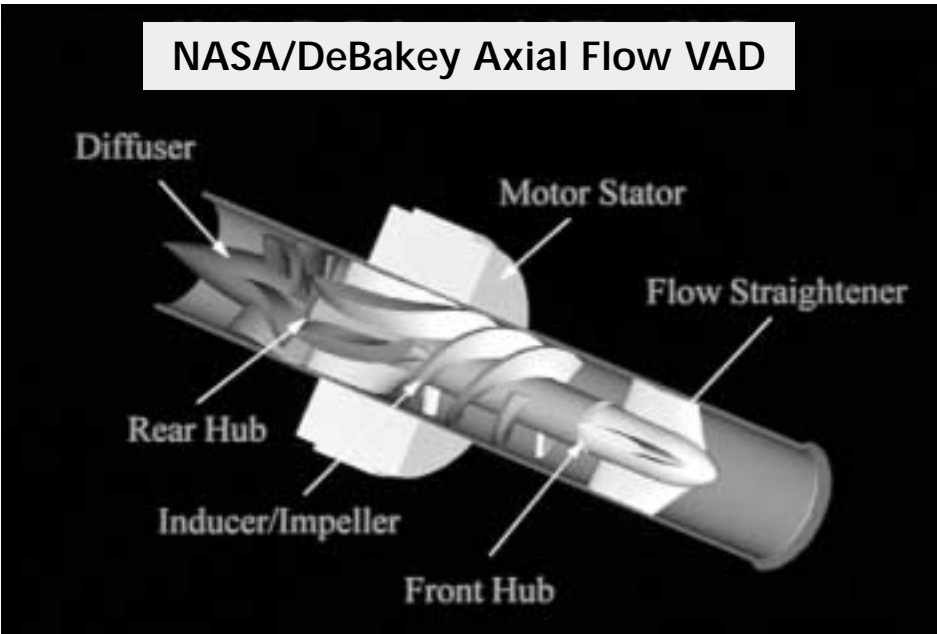
Patients have been noted to live on the MicroMed/DeBakey VAD® for as long as two years before receiving their donor heart. The LVAD is also being credited for allowing enough time for weakened hearts to repair themselves, eliminating the need of a transplant altogether.

Thanks to this medical advance and the resourcefulness of NASA's technology, Dragoo continues to survive.

"Because of the LVAD, he was able to wake up and to hear us say, 'We love you,'" Eriksson said. "Dad is alive because of it."

On Dec. 24, 2002, more than a month after the life-altering heart attack, Dragoo received his new heart. During his hospital stay, Dragoo visited other patients who would soon become LVAD patients and gave them his survival-minded words of encouragement.

"Hang in there, and don't give up," Dragoo said.



#### CLOCKWISE FROM TOP

Joined by his wife, Leslie, Gerald Dragoo celebrates his 57th birthday on Dec. 17, 2002 – one month after receiving the innovative heart pump.  
jsc2003e46931 Photo courtesy of the Dragoo family

A cross-section diagram of the MicroMed/DeBakey VAD® illustrates the key components and inner workings of the cutting-edge heart-assist device.  
s96-09311

A photo of the internal device – a rotational inducer – which increases pressure and allows blood to flow more continuously.  
s99-01826